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Hydnoid basidiomycetes new to Brazil

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Abstract — A survey of wood-decaying fungi from an *Araucaria* forest in the state of Santa Catarina in southern Brazil yielded numerous species of *Agaricomycetes*. Three hydnaceous species collected (*Mycobonia brunneoleuca*, *Mycoacia aurea* and *Spongipellis africana*) represent first records from Brazil. Illustrations and keys to the Brazilian species of *Mycobonia*, *Mycoacia,* and *Spongipellis* are provided.

Key words — *Polyporales,* corticioid, fungal distribution

Introduction

The Atlantic Forest is still common in the state of Santa Catarina, where secondary forest dominates much of the landscape and 23% of the original vegetation cover remains (SOS Mata Atlântica/INPE 2009). The most outstanding feature of this subtropical region is the large extent of mixed *Araucaria* forests that cover the inner plateaus of southern Brazil and the Misiones Province in Argentina (Oliveira-Filho et al. 2009). These forests are easily recognized by their canopies, which are dominated by the chandelier-like crowns of *Araucaria angustifolia* (Bertol.) Kuntze (Sonego et al. 2007), and form complex mosaics with grasslands at higher altitudes (Jarenkow & Budke 2009).

Previous surveys and reviews of hydnoid species from Brazil were published by Rick (1932a,b, 1959), Bononi (1979, 1981), Bononi et al. (1981, 2008), Hjortstam & Bononi (1986a,b, 1987), Capelari & Maziero (1988), Sótão et al. (1991), Jesus (1993), Nietiedt & Guerrero (2000), Gibertoni et al. (2007), and Baltazar & Gibertoni (2009).

The aim of this study was to increase knowledge of hydnoid basidiomycetes (*Agaricomycetes*) from *Araucaria* forests in Brazil.

Materials & methods

The study was made in the Reserva Particular do Patrimônio Natural Rio das Furnas (RPPN Rio das Furnas) located in the Alfredo Wagner municipality, in Santa Catarina, Brazil (27°40′45″S, 49°10′38.4″W). This is a 10 ha reserve within the *Araucaria* forest region.

Microscopic characters were examined and measured using light microscopy, on slides mounted with 1% aqueous phloxine solution (plus 1% or 5% KOH) and Melzer's reagent (Ryvarden 1991). Drawings were made with the aid of a drawing tube. Voucher specimens are archived at FLOR (Thiers 2007).

Taxonomy

Mycobonia brunneoleuca, *Mycoacia aurea,* and *Spongipellis africana* represent new records from Brazil and are described below based on the newly collected material. Keys including related Brazilian taxa are also provided.

Gloeophyllaceae Jülich

Mycobonia brunneoleuca (Berk. & M.A. Curtis) Pat., Essai Tax. Hyménomyc.: 75. 1900. Fig. 1

Voucher material: **BRAZIL. Santa Catarina:** Alfredo Wagner, RPPN Rio das Furnas, 07.VII.2008, Gerlach & Giovanka 122, FLOR 32323.

Brief diagnosis: *Mycobonia brunneoleuca* is characterized by the longer hyphal pegs (≤ 180 µm outside the hymenium), robust basidia (≤ 80 × 13–20 µm), and ovoid-elliptic basidiospores, 15–24(–25) × (6–)7–11 µm, which contain many oil droplets.

Additional specimens examined — **BRAZIL. Santa Catarina:** Itapiranga, Scholz s/n, 15.IV.1985, FLOR 0109; Três Barras, Flona, Drechsler-Santos s/n, 22.XI.2003, FLOR 31465; Mondaí, Linha Uruguai, 27.XII.2006, Campos-Santana, Santana & Souza-Rodrigues 188, FLOR 32226; 23.V.2007 Campos-Santana & Santana 223, FLOR 32227.

Distribution: Neotropical.

Comments: *Mycobonia brunneoleuca* and *M. flava* (Sw.) Pat. are macroscopically indistinguishable except for their basidiospores, which are wider and ovoid-elliptic in *M. brunneoleuca*. Dennis (1970), who regarded these taxa as the same species, considered them common in cloud forests of Venezuela (e.g., Sierra de la Costa) between 1600 and 2000 meters. According to Reid (1976) it is possible that both species occupy the same geographical region but live in different niches, with *M. brunneoleuca* occurring at higher elevations. *Mycobonia flava* was previously collected within the Mondaí (220 m elev.) and Itapiranga (≤ 544 m) municipalities and the Floresta Nacional de Três Barras reserve (766 m) in Santa Catarina. Our material was collected between 750 and 900 m in *Araucaria* forest, which agrees with observations made by Reid.

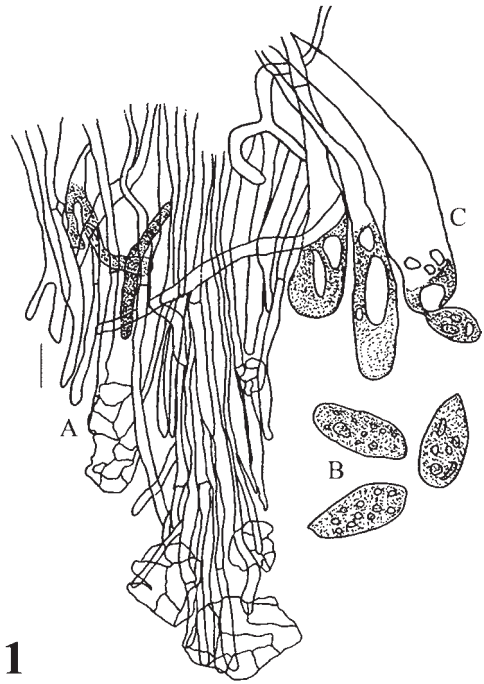

Fig. 1. *Mycobonia brunneoleuca*: A, hyphal pegs; B, basidiospores; C, basidia. Scale bars = 10 µm.

Key to *Mycobonia* species in Brazil

1. Spores ovoid-ellipsoid, (6–)7–10 µm wide ..... *M. brunneoleuca*
1. Spores fusoid-ellipsoid, 5–7 µm wide..... *M. flava*

Meruliaceae P. Karst.

Mycoacia aurea (Fr.) J. Erikss. & Ryvarden, Corticiac. N. Europe 4: 877. 1976. Fig. 2

Voucher material: **BRAZIL. Santa Catarina:** Alfredo Wagner, RPPN Rio das Furnas, Reck, 17.VII.2009, Gutjahr 09, FLOR 32415.

Brief diagnosis: *Mycoacia aurea* has resupinate basidiomata that are very soft when fresh and with a horny consistency when dried. The species is characterized by a palisade hymenium (≤ 35 µm thick), subiculum with thin to slightly thick-walled, clamped generative hyphae, clavate 4-spored basidia with basal clamps, and suballantoid basidiospores (4–5 × 1.5–2 µm).

Additional specimen examined: **SWEDEN. Darlna:** Husby, Rankholmen i Flinesjön, naturreservat, 6.5 Km SO Husby K:a. Lat/long: 60°22′N, 16°06 ′E, Grid:

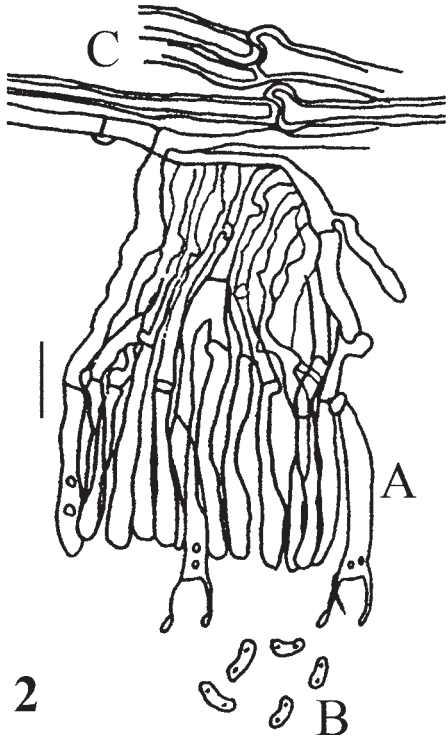

Fig. 2. *Mycoacia aurea*: A, hymenium; B, basidiospores; C, generative hyphae. Scale bars = 10 μm.

RN 6694300 1517200, Alt. 80 m. Prunus-Laga i graalskog, alvplan, 18.III.1990, Janolof Hermansson S253, Herb. Univ. Upsaliensis F-140874, 425667.

Distribution: Cosmopolitan.

Comments: Eriksson & Ryvarden (1976) distinguish *M. aurea* from other *Mycoacia* species by its small allantoid basidiospores, absence of cystidia, and absence of a red KOH reaction. Hjortstam & Ryvarden (1996) noted that *M. aurea* lacks incrusted hyphal endings in its spines and has suballantoid basidiospores, which coincides with our material. The specimen from Sweden (F-140874) has some encrusted hyphae but is otherwise very similar to the Brazilian specimen.

Key to *Mycoacia* species in Brazil

(based on Hjortstam & Ryvarden 1996)

1. Hymenophore tuberculate, subulate cystidia rare . . . . . *M. livida*

1. Hymenophore hydnoid, cystidia either not subulate or absent 2

2. Cystidia present 3
2. Cystidia absent 4
3. Cystidia subulate to acicular, encrusted hyphae present ..... *M. fuscoatra*
3. Cystidia subfusiform, encrusted hyphae absent ..... *M. uda*
4. Basidiospores allantoid, 4–4.5 × 1–1.25 µm ..... *M. subconspersa*
4. Basidiospores suballantoid, 3.5–5.5 × 1.5–2 µm ..... *M. aurea*

Polyporaceae Corda

Spongipellis africana Ipulet & Ryvarden, Syn. Fung. 20: 97. 2005. Fig. 3

Voucher material: **BRAZIL. Santa Catarina:** Alfredo Wagner, RPPN Rio das Furnas, 17.XII.2008 ,Gerlach, Giovanka 155, FLOR 32416.

Brief diagnosis: *Spongipellis africana* has widely adhered to effuse reflexed basidiomata that are soft when dried, clavate 4-spored basidia with basal clamps, and basidiospores that are (sub)globose [4–5(-6) × 4–5 µm], thick-walled, smooth, and with positive cyanophilic reaction.

Additional specimen examined: **URUGUAY.** Dto Treinta e tres Quebrada de los Cuervos, on dicotyledonous dead wood, 1.VII.1993, C. Prigioni MVM 374, BAFC 34059.

Distribution: Pantropical.

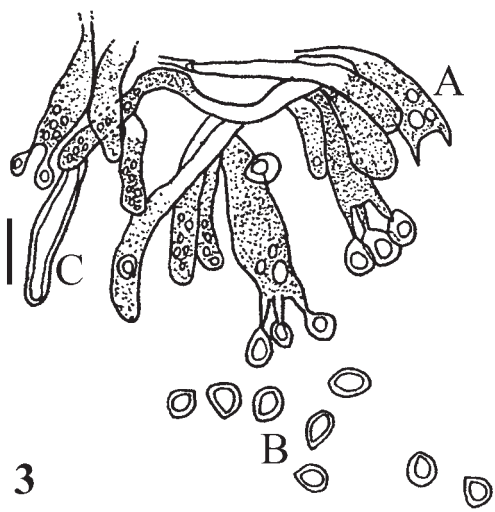

Fig. 3. *Spongipellis africana*: A, hymenium; B, basidiospores; C, cystidia. Scale bars = 10 µm.

Comments: According to Ipulet & Ryvarden (2005), *S. africana* is macroscopically identical to *S. pachyodon* (Pers.) Kotl. & Pouzar but easily separated by its smaller basidiospores. Ipulet & Ryvarden (2005) did not observe

cystidia in this species; however, our material has inconspicuous metuloid cystidia in the hymenium. The specimen from Uruguay (BAFC 34059) was previously identified as *S. pachyodon* but it has smaller basidiospores. Therefore, we believe that this specimen is also *S. africana*, which extends the distribution of *S. africana* to Brazil and Uruguay.

Key to *Spongipellis* species in Brazil

(based on Piatek et al. 2004, Rajchenberg & Meijer 1990, Gilbertson & Ryvarden 1986)

1. Hymenophore distinctly hydnoid. 2

1. Hymenophore poroid, or sometimes sinuous to daedaleoid 3

2. Basidiospores globose to broadly ellipsoid, 5.5–7 × 4.5–5.5 µm . . . . . *S. pachyodon*

2. Basidiospores globose, 4–4.5 µm . . . . . *S. africana*

3. Pores subgyrose, 1–3/mm, compressed when dry, dentate to fimbriate, hymenophore pinkish red to pinkish salmon when fresh, basidiospores ellipsoid to broadly ellipsoid, 4.6–6 × 3.3–4.3 µm . . . . . *S. caseosus*

3. Pores angular, 4-5/mm, hymenophore white to cream, basidiospores broadly ellipsoid to globose (ovoid), 4.5–6 × 4–5 µm . . . . . *S. fractipes*

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